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SUMMARY OF WATER QUALITY STANDARDS FOR THE INTERSTATE WATERS OF ARKANSAS

Environmental Protection Agency
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ARKANSAS

WATER QUALITY STANDARDS

SUMMARY

Revised April 1972

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY

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PREFACE

The information contained herein has been condensed from Water Quality Criteria and Plan for Implementation, State of Arkansas, prepared by the Arkansas Department of Pollution Control and Ecology,* and approved by the Administrator of the Environmental Protection Agency,** This summary is intended for all who have an interest in the quality of water in the State.

A summarization of this type, of necessity, omits many pertinent details. For more detailed information, consult the Arkansas Department of Pollution Control and Ecology or the complete text.

*Prior to July 1, 1971, the Arkansas Pollution Control Commission.
**Prior to December 2, 1970, the Secretary of the Interior.

Revised April 1972

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SUMMARY OF WATER QUALITY STANDARDS

FOR

THE INTERSTATE WATERS OF ARKANSAS

INTRODUCTION

In the Water Quality Act of 1965, Congress authorized the establishment of water quality standards for interstate waters. The purpose of these standards is to protect the public health and welfare and enhance the quality of the Nation's interstate waters to serve a variety of beneficial uses, such as public water supply, recreation, protection of aquatic life, industrial, and agricultural uses. This publication summarizes the standards for the general information of the public and Federal, State and local officials as to the uses and associated requirements for interstate water-ways in the State of Arkansas.

The Act, which amended the Federal Water Pollution Control Act, provided for the States to establish standards for their interstate waters, which were then subject to review and approval by the Secretary of the Interior.* All States, and the District of Columbia and the Territories of Guam, Puerto Rico and the Virgin Islands participated in this landmark effort to set standards. In the course of establishing the standards, public hearings were held by the States and other jurisdictions noted above to give the public an opportunity to participate.

Arkansas adopted standards for its interstate waters on May 26, 1967, which were then submitted to the Department of the Interior. Subsequently, certain revisions were made by the State in the original standards, and the Secretary of the Interior approved the standards, as revised, on August 7, 1967. At the request of the Secretary of the Interior, Arkansas adopted a policy to protect its high quality waters. The approved standards are thus both State and Federal Standards, enforceable under the Arkansas water pollution control statutes and the Federal Water Pollution Control Act, as amended (Section 10).

*After December 2, 1970, the Administrator of the Environmental Protection Agency.

The interstate waters for which standards were adopted are listed below and depicted in Figure I.

The water quality criteria established by Arkansas apply to the following interstate streams:

UPPER WHITE, NEOSHO, GRAND BASINS

Illinois River, Spavinaw Creek, Barren Fork, Elk River, White River (above Newport), Black River, Current River, Eleven Point River, Spring River, English Creek, and King's River.

LOWER WHITE BASIN

White River (Newport to Mississippi River) and Cache River.

ST. FRANCIS BASIN

Pemiscot Bayou, Buffalo Creek and St. Francis River.

ARKANSAS BASIN

Arkansas River and Poteau River.

UPPER OUACHITA BASIN

Upper Ouachita River down to and including mouth of Little Missouri River.

LOWER OUACHITA BASIN

Bayou Macon, Boeuf River, Bayou Bartholomew, Overflow Creek, Chemin-a-Haut Creek, Ouachita River (Mouth of Little Missouri to Louisiana line), Bayou Loutre, Little Cornie Bayou, Three Creeks, Cornie Bayou, and Big Cornie Creek.

RED RIVER BASIN

Little River, Dorcheat Bayou, Bodcaw Creek, Lelly Bayou, McKinney Bayou, Sulphur River, and Red River.

MISSISSIPPI RIVER

The standards consist of three major components: designation of the uses which the waters are to serve, specification of narrative and numerical criteria to protect and enhance water quality, and specification of a plan of implementation and enforcement, which includes treatment and control requirements for municipal, industrial and other wastes discharged to or affecting the waters. These components are discussed in the following sections; all three are essential to a complete standards program.

The standards are now being implemented. However, there will be continuing research on water quality requirements for various beneficial uses and for improved collection and evaluation of water quality data. As more information becomes available and experience with implementing the standards is gained, the standards will be refined and improved to reflect this new knowledge.

Should more detailed information be required on any aspect of the standards, it may be obtained from the Arkansas Department of Pollution Control and Ecology, Little Rock, Arkansas, or the Environmental Protection Agency Regional Office in Dallas, Texas. On March 26, 1971, Arkansas established water quality standards for its intrastate waters. Information on these standards may also be obtained from the Arkansas Department of Pollution Control and Ecology. The addresses of these offices are given on page 21.

WATER USES

The designation by the State of Arkansas of specific uses in all river basins is to protect present uses, recognize practicable future uses, provide where possible for a variety of uses, and to assure compatibility of standards with Federal, State and local resource planning. With few exceptions, the streams of Arkansas contain waters of a quality suitable for all legitimate uses without the necessity of unreasonable water treatment. Where man-made pollution exists, substantial progress has been and is being made in abatement.

It is the purpose of these criteria to preserve and enhance the quality of this water so that it shall be reasonably available for all beneficial uses and thus promote the social welfare and economic well-being of the people of the State. To satisfy the intent of the Federal Water Pollution Control Act to enhance water quality, the standards specifically provide that no interstate waters may be used solely or primarily for waste assimilation. The waters must be aesthetically pleasing, and this quality is protected by narrative criteria preventing unsightly or obnoxious conditions, such as floating debris, oil slicks, unpleasant odors, and colors.

Specific use designations for all waters covered by the standards are provided in Table I.

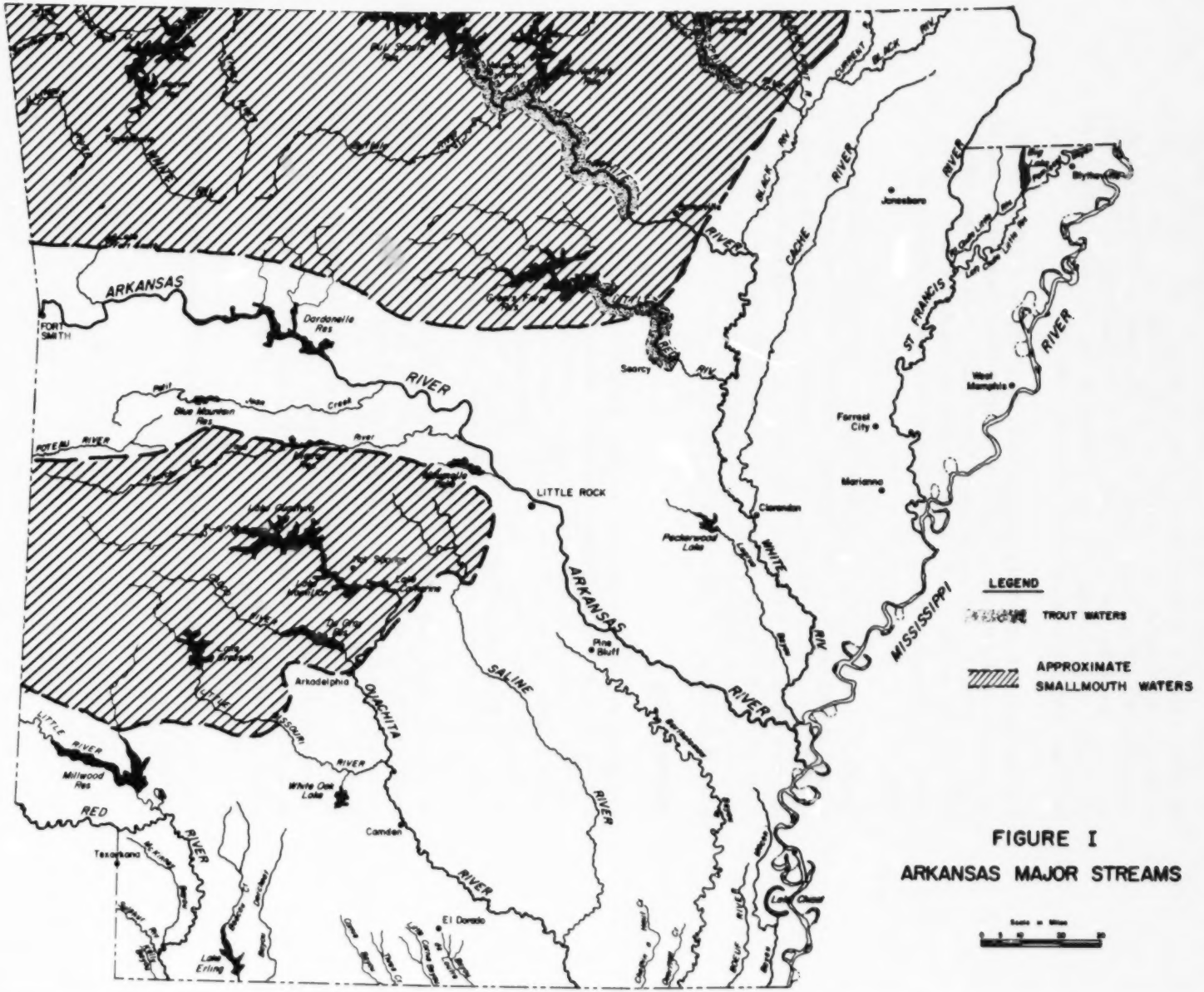


FIGURE I

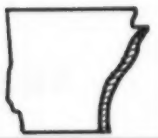
ARKANSAS MAJOR STREAMS

TABLE I

INTERSTATE WATERS	* WATER USES										
	PUBLIC WATER SUPPLY	INDUSTRIAL WATER SUPPLY	WILDLIFE & STOCK WATERING	IRRIGATION	FUEL - ELECTRIC POWER	RECREATION		FISH & AQUATIC		TREATED WASTE ASSIMILATION	NAVIGATION
						WHOLE BODY CONTACT SPORTS	PARTIAL BODY CONTACT SPORTS	TROUT STREAMS	OTHER STREAMS		
UPPER WHITE, NEOSHO, GRAND BASINS	X	X	X	X	X	X	X	X	X	X	X
STREAM: ILLINOIS RIVER, SPAVINAW CREEK, BARREN FORK, ELK R., WHITE RIVER (ABOVE NEWPORT), BLACK RIVER, CURRENT RIVER, ELEVEN POINT RIVER, SPRING RIVER, ENGLISH CREEK, AND KING'S RIVER											
LOWER WHITE BASIN	X	X	X	X		X	X		X	X	X
STREAM: WHITE RIVER (NEWPORT TO MISSISSIPPI RIVER), AND CACHE RIVER											
ST. FRANCIS BASIN			X	X	X		X		X	X	
STREAM: PENISCOT BAYOU, BUFFALO CREEK, AND ST. FRANCIS RIVER											
ARKANSAS BASIN	X	X	X	X	X		X		X	X	X
STREAM: ARKANSAS RIVER, AND POTEAU RIVER											

* *All of the indicated uses will be found within the river basin shown; however, all uses may not be applicable to a particular stream reach. For specific information, contact the Arkansas Department of Pollution Control and Ecology.*

TABLE I

INTERSTATE WATERS	* WATER USES										
						RECREATION		FISH & AQUATIC			
	PUBLIC WATER SUPPLY	INDUSTRIAL WATER SUPPLY	WILDLIFE & STOCK WATERING	IRRIGATION	FUEL - ELECTRIC POWER	WHOLE BODY CONTACT SPORTS	PARTIAL BODY CONTACT SPORTS	TROUT STREAMS	OTHER STREAMS	TREATED WASTE ASSIMILATION	NAVIGATION
UPPER OUACHITA BASIN	X	X	X	X	X	X	X		X	X	
STREAM: UPPER OUACHITA RIVER DOWN TO AND INCLUDING MOUTH OF LITTLE MISSOURI RIVER.											
LOWER OUACHITA BASIN	X	X	X	X		X	X		X	X	X
STREAM: BAYOU MACON, BOEUF RIVER, BAYOU BARTHOLOMEW, OVERFLOW CREEK, CHEMIN-A-HART CREEK, OUACHITA RIVER (MOUTH OF LITTLE MISSOURI RIVER TO LOUISIANA LINE), BAYOU LOUTRE, LITTLE CORNIE BAYOU, THREE CREEKS, CORNIE BAYOU, AND BIG CORNIE BAYOU.											
RED RIVER BASIN	X	X	X	X		X	X		X	X	X
STREAM: LITTLE RIVER, DORCHEAT BAYOU, BODCAW CREEK, KELLY BAYOU, Mc KINNEY BAYOU, SULPHUR RIVER, AND RED RIVER.											
MISSISSIPPI RIVER							X		X	X	X
											

* *All of the indicated uses will be found within the river basin shown; however, all uses may not be applicable to a particular stream reach. For specific information, contact the Arkansas Department of Pollution Control and Ecology.*

WATER QUALITY CRITERIA

The protection of water quality and uses requires the establishment of numerical and narrative limits on pollutants which damage these uses. The water quality criteria in this section reflect the best scientific judgment available as to the water quality requirements for the assigned uses. Numerical criteria are used wherever it is reasonable to do so. However, narrative criteria are also necessary in some cases, particularly with respect to aesthetic considerations.

Some waters have a higher quality than the minimum levels assigned for protection of water uses, and the standards seek to protect this higher quality as much as possible in the face of increasing social and economic developments. Scientific knowledge about the exact water quality requirements for every use is limited, and by preventing degradation of high quality waters, the standards seek to assure optimum, not marginal, conditions to protect the uses associated with clean waters. The water quality criteria to protect the designated uses in each river basin is shown below under general and specific criteria and in Table II. Also included is a statement on controlling degradation of high quality waters, by the Arkansas Department of Pollution Control and Ecology.

GENERAL CRITERIA

1. Methods – The methods of sample collection, preservation, measurements and analyses shall be in accordance with the latest edition of "Standard Methods For The Examination of Water and Wastewater" or other proven methods acceptable to the Department.

2. Location – The effect of wastes on the receiving stream shall be determined after the wastes have been thoroughly mixed with the stream water, but consideration may also be given to the quality of the waste effluent in determining the adequacy of treatment.

3. Ephemeral Streams – Where there are streams with intermittent flow, the treatment of waste discharged thereto shall be no less than conventional secondary or equivalent if reasonably required to protect present and projected future downstream uses.

4. Stream Flows – These criteria are based upon the assumption that existing flow conditions in interstate streams shall continue without materi l change. The minimum weekly flow that occurs on the average once in 10 years will be used in applying these criteria.

5. The quality of streams tributary to the interstate streams shall be controlled so that the quality of the interstate streams will not be lowered beyond the criteria set herein.

SPECIFIC CRITERIA

1. Temperature – The maximum temperature shall not be elevated above 68° F. in trout streams, 86° F. in small-mouth bass streams, and 95° F. in other streams. The temperature of a stream as determined by natural conditions shall not be increased or decreased more than 5° F. by discharges thereto.

2. Color – True color shall not be increased to the extent that it will interfere with present usage and projected future use of the stream.

3. Turbidity – There shall be no distinctly visible increase in turbidity due to waste discharges to the stream.

4. Taste and Odor – Taste and odor producing substances shall be limited to concentrations in the stream that will not interfere with the production of potable water by reasonable water treatment processes, or impart unpalatable flavor to food fish, or result in offensive odors arising from the stream, or otherwise interfere with the reasonable use of the water.

5. Solids, Floating Material, and Deposits – The stream shall have no distinctly visible solids, scum or foam of a persistent nature, nor

shall there be any formation of slimes, bottom deposits or sludge banks, attributable to waste discharges.

6. Oil and Grease – The stream shall be essentially free of the relatively nonvolatile liquid components that contribute to the formation of oil films, deposits and emulsions.

7. pH – The pH of water in the stream must not fluctuate in excess of 1.0 pH unit, within the range of 6.0 – 9.0, over a period of 24 hours. The pH shall not be below 6.0 or above 9.0 due to wastes discharged to the receiving stream.

8. Dissolved Oxygen (D.O.) – The dissolved oxygen in the stream shall not be less than 4 ppm, and this shall be the critical deficit point of the dissolved oxygen profile. The only exception will be when periodic lower values are of natural origin and therefore beyond control of the water user. For trout stream waters the minimum dissolved oxygen content shall not be less than 5.0 mg/1. The dissolved oxygen sample shall be taken at mid-depth and the middle of the stream on the smaller streams and rivers. On the larger rivers the dissolved oxygen shall be determined by the average of concentrations in samples collected at quarter points across the river, and at two-tenths and eight-tenths of the depth at each point.

9. Radioactivity – The Rules and Regulations for the Control of Sources of Ionizing Radiation, of the Division of Radiological Health, Arkansas Department of Health,* shall apply as to the limits established for radiation levels in uncontrolled areas.

10. Bacteria – The Arkansas Department of Health has the responsibility of approving or disapproving surface waters for swimming and drinking water supply, and it has issued rules and regulations pertaining to such uses. The regulation of the Department of Pollution Control and Ecology states that the coliform group shall not exceed 1000/100 milliliters as a monthly average value (either most probable number or membrane filter count) for

*Prior to July 1, 1971, the Arkansas State Board of Health.

waters substaintially used for body contact aquatic sports; nor exceed this number in more than twenty percent of the samples examined during any one month; nor exceed 2,400/100 milliliters on any day except during periods of storm water runoff; provided, however, that no fecal contamination is known to be present. In other waters, the coliform bacteria group shall not exceed 5,000/100 milliliters as a monthly average value (either Most Probable Number or membrane filter count); nor exceed this number in more than twenty percent of the samples examined during any month; nor exceed 20,000/100 milliliters in more than 5% of such samples. Arithmetic averages will be used.

11. Toxic Substances – Toxic materials, organic or inoganic, shall not be present in such quantities as to cause the waters to be toxic to human, animal, plant or aquatic life or to interfere with the normal propagation of aquatic life. For aquatic life and using bioassay techniques, the level of toxic materials in the stream shall not exceed one-tenth (0.1) of the forty-eight (48) hour Median Tolerance Limit.

12. Mineral Quality – Waste discharges shall not affect existing mineral quality so as to interfere with other beneficial uses. Recognizing that the present water quality of the Arkansas and Red Rivers is less than desirable from natural as well as manmade sources, additional mineral discharges will be limited with the intent of improving the quality as plans for removing major natural salt sources are implemented. In the lower Ouachita River Basin it is recognized that water quality is low due primarily to manmade sources, but constantly improving under existing controls. Numerical mineral criteria will be set and implemented within the next five years* as existing quality and results of the present controls are evaluated.

*By August 2, 1972.

ARKANSAS NON-DEGRADATION RESOLUTION

WHEREAS, the Arkansas Pollution Control Commission* has heretofore promulgated Regulation No. 2, establishing water quality criteria for interstate streams within the State of Arkansas, pursuant to the provisions of Section 3 of the Arkansas Water and Air Pollution Control Act (Act 472 of the Acts of Arkansas for 1949, as amended; Ark. Stats., §82-1904), and in compliance with the requirements of the Federal Water Quality Act of of 1965 (Public Law 89-234, 33 U.S.C.A., §466g); and

WHEREAS, said Regulation provides that "The criteria are designed to enhance the quality, value, and beneficial uses of the water resources of the State of Arkansas and to aid the prevention, control, and abatement of water pollution"; and

WHEREAS, said Regulation further provides that "It is the purpose of these criteria to preserve and enhance the quality of this water so that is shall be reasonably available for all beneficial uses and thus promote the social welfare and economic well-being of the people of the State"; and

WHEREAS, said Regulation further provides for a clear and unequivocal non-degradation policy, to-wit:

> "3. The water quality criteria herein contained shall not be construed as permitting any waste amenable to treatment or control to be discharged into any water of the State of Arkansas without reasonable treatment or control. The Arkansas Water and Air Pollution Control Act provides, among other things, that it shall be unlawful for any person to discharge any waste into any waters of the State without having first obtained a written permit from the Commission. A disposal permit may not be issued unless there is submitted to the Commission plans and specifications for a disposal system adequate to treat or control the wastes so as not to cause water pollution as defined in the Act. Such treatment or control must be consistent with the state of the art

*After July 1, 1971, the Arkansas Department of Pollution Control and Ecology.

and best practicable industry standards, the minimum requirements being secondary treatment or equivalent, giving due regard to quality and flow of the receiving waters, the present, future and potential uses of such waters, economic feasibility, and other relevant factors".

and

WHEREAS, the Water Quality Standards for Interstate Streams adopted by the Commission, of which Regulation No.2 is an integral part, were approved without exception by the Secretary of Interior on August 7, 1967; and

WHEREAS, subsequent to such approval the Secretary of the Interior and the Federal Water Pollution Control Administration* articulated a non-degradation policy, which has been authoritatively construed and explained by responsible officials of the Department of the Interior as set forth in a Compendium dated August, 1968; and

WHEREAS, the non-degradation policy incorporated in Regulation No. 2, making clear that waters of existing quality higher than the established standards may not be degraded by untreated waste discharges even though the resulting water quality might comply with the standards and that a waste disposal permit, as required by law, will not be issued by the Commission unless the treatment or control is consistent with the state of the art and best practicable industry standards (the minimum requirements being secondary treatment or equivalent), is at least as strong as that subsequently adopted by the Secretary of the Interior and is fully consistent therewith; and

WHEREAS, the Commission wishes to assure the Secretary of the Interior and Federal Water Pollution Control Administration of its cooperation in implementing the Arkansas Water Quality Standards in general and the non-degradation policy in particular, including the furnishing of relevant information and data;

NOW, THEREFORE, BE IT RESOLVED, That the Arkansas Pollution

*After December 2, 1970, the Administrator of the Environmental Protection Agency.

Control Commission, its agents, servants, and employees, shall cooperate with the Secretary of Interior and the Federal Water Pollution Control Administration in implementing the Arkansas Water Quality Standards and the non-degradation policy incorporated therein. In connection with such implementation, the Secretary of the Interior and the Federal Water Pollution Control Administration will be kept advised and will be provided with such information as they will need to discharge their responsibilities under the Federal Water Pollution Control Act, as amended.

BE IT FURTHER RESOLVED, That the Director of the Commission is hereby authorized and directed to take such action as may be necessary or appropriate to effectuate the foregoing.

Resolved the 25th day of October, 1968.

Resolved, That the statement adopted by the Arkansas Pollution Control Commission on October 25, 1968 concerning implementation of the Arkansas Water Quality Standards and the Federal Water Pollution Control non-degradation policy is hereby amended by adding a new paragraph immediately prior to the concluding paragraph thereof reading as follows:

Be It Further Resolved, That it is recognized that certain of the waters of the State possess an existing quality which is better than established standards. The quality of these waters will be maintained unless and until it has been affirmatively demonstrated to the Commission that any reduction in quality is justifiable as a result of necessary economic or social development.

Resolved the 28th day of March, 1969.

TABLE II

INTERSTATE WATERS	CRITERIA																		
	TEMPERATURE				COLOR	TURBIDITY	TASTE & ODOR	SOLIDS, FLOATING MATERIAL & DEPOSITS	OIL & GREASE	PH	DISSOLVED OXYGEN (D.O.)		RADIO-ACTIVITY*	BACTERIA			TOXIC SUBSTANCE	MINERAL QUALITY
	68° F MAX., TROUT	86° F MAX., SM. BASS	95° F MAX., OTHER W.	5° F MAX., CHANGE	SUBSTANTIALLY FREE	SUBSTANTIALLY FREE	VIRTUALLY ABSENT TREATABLE	SUBSTANTIALLY FREE	ESSENTIALLY FREE	6.0 - 9.0 MAX. CHANGE 1.0 UNIT / 24 HR.	4ppm MIN. ALL WATERS	5ppm MIN. TROUT	AS LISTED IN ARKANSAS DEPARTMENT OF HEALTH REGULATIONS	5,000/100 ml COLI. (GENERAL)	5,000/100 ml COLI. (PWS)	1,000/100 ml COLI. (REC. - WBC)	NOT TOXIC TO HUMAN, ANIMAL, PLANT OR AQUATIC LIFE.	PROGRAM TO ESTABLISH NUMBERS, NARRATIVE.
UPPER WHITE, NEOSHO, GRAND BASINS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LOWER WHITE BASIN			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ST. FRANCIS BASIN			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ARKANSAS BASIN			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
UPPER OUACHITA BASIN		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LOWER OUACHITA BASIN			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RED RIVER BASIN			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MISSISSIPPI RIVER			X	X	X	X	X	X	X	X	X	X	X	X			X	X

*Controlled by Arkansas Department of Health

IMPLEMENTATION PLAN

The "action" plan of the standards is the plan of implementation and enforcement. For example, Arkansas regulations provide that the discharge of wastes into interstate waters or portions thereof, which reduces the quality of such waters below the water quality criteria established by regulation (whether the matter causing or contributing to such reductions is discharged directly into such waters or reaches such waters after discharge into tributaries of such waters) is subject to the abatement and enforcement provisions of the Arkansas Water and Air Pollution Control Act.

The implementation plan sets forth the requirements for treatment and/or control of all conventional municipal and industrial waste discharges that affect Arkansas waters. It also specifies the time within which treatment of wastes is to be accomplished, and contains programs for dealing with other water pollution control problems. In general, the Arkansas standards call for a level of waste treatment or control that must be consistent with the state-of-the-art and best practicable industry standards, the minimum requirement being secondary treatment or equivalent, giving due regard to quality and flow of the receiving waters, the present, future and potential uses of such waters, economic feasibility, and other relevant factors. The installation of secondary treatment facilities or their equivalent for all municipal and industrial wastes is scheduled to be completed by the end of 1972. Detailed information on the treatment requirements for any particular waste water may be obtained from the Arkansas Department of Pollution Control and Ecology.

This Department is composed of ten members; six of these represent various state agencies directly concerned with pollution: the Department of Health, Game and Fish Commission, Oil and Gas Commission, Soil and Water Conservation Commission, Geological Commission, and State Forestry Commission. The other four members are appointed by the Governor with the approval of the State Senate, and represent industry, municipalities, mining, and agricultural and livestock interests in the State.

Arkansas statutes provide for the control of water pollution on the basis of a permit system. Under this system an industry or municipality must submit complete plans and specifications for waste treatment facilities to the

Department for approval and issuance of a permit before construction may commence. Industries are required to submit a process flow sheet showing each step in the industrial process, and a materials balance showing types and quantities of materials that go into and leave each step in the industrial process, including flow rates of water for present and proposed future operations. Industrial treatment facilities, as well as municipal, are checked as soon after construction as possible to assure compliance with the permit issued and to determine if efficiency of waste treatment is adequate.

The basis for most Department enforcement and corrective activity is the basin survey. This is a part of a routine and continuous observation to check the efficiency of waste treatment plants and their effects on the receiving streams. The waste survey consists of twenty-four hour composite sampling of each municipal and industrial waste stream for five days with appropriate chemical analysis of each sample. Flows are measured continuously for ten days in order to obtain averages and extremes. Where treatment facilities exist, sampling is accomplished at each stage of treatment in order to obtain efficiencies and locate possible problems. Streams that receive these wastes are sampled on four different days above each point of discharge and at several points below, covering a sufficient distance to determine the nature and the extent of any damage to the watercourse. In addition to chemical analysis of the stream, a complete biological analysis is performed including classification and counts of plankton, bottom organisms, bacteria, and fish life. Upon completion of the field work, all engineering, chemical, and biological data is tabulated and a detailed report including procedures, results, and recommendations is submitted for Department action.

The State has been divided into eight districts based on concentrations of potential pollution sources. Field inspectors are responsible for periodic spot surveys of all significant wastewater discharges in their district plus monitoring of interstate and other streams for compliance with the standards.

The Arkansas Game and Fish Commission has at least two wildlife officers in each of the State's seventy-five counties who are on the alert for pollution, especially if it results in fish kills. The Fisheries Division also monitors the temperature of trout streams.

When abatement action becomes necessary, the sequence usually follows this pattern:

a. Complete basin survey.
b. Public Hearing.
c. Issuance of a general order.
d. A "show cause" hearing.
e. Issuance of a specific order.
f. Litigation.

For specific cases in response to complaints, or for irregularities found during routine inspection, or because of predicted overloads based on treatment plant files, the following sequence is normal:

a. Spot survey.
b. A "show cause" hearing.
c. Issuance of specific order.
d. Litigation.

In the event of pollution immediately endangering the health and welfare of the public, the cease and desist order is issued immediately followed directly by litigation, if necessary.

The Arkansas portion of the Arkansas River navigation project will present potential pollution problems that involve barge accidents and oily and other discharges from vessels. Such problems will be handled in a manner similar to fish kills, depending on notification and reporting by wildlife officers of the Arkansas Game and Fish Commission, field inspectors of the Arkansas Department of Pollution Control and Ecology, lock and dam personnel, marina operator and other private citizens. Sanitary discharges from navigation vessels are presently controlled statewide by the Arkansas Department of Health under Rules and Regulations Pertaining to Marine Toilets and Disposal of Sewage from Boats.

Of major importance is water quality degradation caused by natural brine emissions and by disposal of oil field brines in the watersheds of the Arkansas, Ouachita, and Red Rivers. In the Arkansas and Red Rivers, excessive mineral content results primarily from natural brine emissions upstream from the Arkansas boundary and eliminates use of these waters for drinking purposes.

The Arkansas Department of Pollution Control and Ecology has implemented a successful program for abatement of mineral pollution from oil field brines in the Ouachita and Red River basins. Additionally, Federal programs now are under way to correct natural mineral pollution in the Arkansas and Red River watersheds but the results of these programs will not be known for several years.

The Arkansas Department of Pollution Control and Ecology has adopted a state-wide policy to eliminate water quality problems arising from combined sewer systems. The Department policy is one of allowing no new combined sewers while eliminating present systems by scheduled construction projects. The Department has also adopted a sewer use ordinance which limits by name the amounts and types of pollutional materials which can be discharged into the system.

The Arkansas Soil and Water Conservation Commission administers the Small Watershed Program which alleviates siltation of surface waters from land runoff.

Other existing water quality problems are acid mine drainage, agricultural feedlots and runoff, irrigation return flows, and nutrients from municipal sewage treatment plant discharges. As the technology for feasible solutions improves, progress will be made toward abatement of these problems to enhance the quality of Arkansas waters.

EXPLANATION OF TERMS

1. Bacteria – For many years the best indicator of the sanitary quality of water has been an estimate of the density of coliform bacteria. The results of this test are not specific in that many bacteria common to the soil are included; therefore many agencies have not been satisfied with criteria based on this test. More recently, tests have been developed for the determination of fecal coliform and fecal streptococci. However, sufficient information has not been developed to properly evaluate the results of these tests. Until criteria are developed which are more specific the Arkansas Department of Pollution Control and Ecology shall use the criteria given in Regulation No. 2 for bacteria.

2. Dissolved Oxygen (D.O.) – Due to the diurnal fluctuations of dissolved oxygen in streams, the minimum dissolved oxygen value shall apply at or near the time of the average concentration in the stream, taking into account the diurnal fluctuations.

3. Ephemeral Streams – Those streams that have no natural flow on the average of one (1) day in two (2) years.

4. Interstate Streams – All major interstate streams have been included in the listing in Regulation 2. Others not included but which were listed in the Federal Inventory will fall under the normal Department pollution control program under Act 472.

5. Milliliter – One-thousandth of a liter. One liter is equal to 1.06 quarts.

6. pH – the pH value indicates the relative intensity of acidity or alkalinity of water, with the neutral point at 7.0. Values lower than 7.0 indicate the presence of acids; above 7.0, the presence of alkalies.

7. Ppm – Parts per million, also referred to as milligrams per liter (mg/l.). This is a unit for expressing the concentration of any substance by weight, usually as grams of substance per million grams of solution. Since a liter of water weighs one kilogram at a specific gravity of 1.0, one part per million is equivalent to one milligram per liter.

8. Secondary Treatment – The removal of practically all suspended solids and the reduction of the biochemical oxygen demand at all times by at least eighty-five (85) percent, and may include the in-plant control of industrial wastes as prescribed by the Department.

9. Temperature – The limitation of temperature increase or decrease of 5^{o} Fahrenheit from natural temperature conditions is so that a thermal shock barrier is prevented within the stream.

10. Stream Flow – On certain streams present low flows will be increased by minimum releases from future control structures.

STATE AND FEDERAL AGENCY ADDRESSES

A. STATE

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